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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/790,680

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Hua Wu

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EXAMINER

HU, HENRY S

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/790,680

Applicant(s)

WU ET AL.

Examiner

Henry S. Hu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Election of March 28, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-33 is/are pending in the application.
- 4a) Of the above claim(s) 31 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-30 and 33 is/are rejected.
- 7) ☒ Claim(s) 18,27,28 and 33 is/are objected to.
- 8) ☒ Claim(s) 18-33 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3-3-2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application 10/790,680 filed on March 3, 2004 is a **DIV of 10/205,494** (now allowed). This Office Action is in response to **Election** filed on March 28, 2006. **Applicant's election of Group I, Claims 18-30 and 33 is traversed with remarks on page 1.** The traversal is on the ground(s) that it would not place an undue burden to search and examine the non-elected Group II (Claims 31-32) with the elected Group I since they are so closely related in the field of PFPE copolymers. This is not found persuasive because each group is drawn to a technology apparently requiring search in different classification area. In the instant case Group I was drawn to a low extractable cation (< 1 ppm) and thermo-processable **copolymer** comprising TFE and at least one co-monomer(s) as specified, while Group II was drawn to a different subject matter as **a monomeric compound** (A-II) having a formula of $\text{CFX}_{\text{AI}}=\text{CX}_{\text{AI}}-\text{O}-\text{CF}_2-\text{OCF}_2-\text{CF}_2-\text{Y}_{\text{AI}}$ with $\text{Y}_{\text{AI}} = \text{F}$ or OCF_3 and $\text{X}_{\text{AI}} = \text{F}$ or H .

2. As discussed earlier, some of TFE copolymers from Invention I may be containing repeating units from Invention II. For instance, a monomeric compound (A-II) has a formula of $\text{CFX}_{\text{AI}}=\text{CX}_{\text{AI}}-\text{O}-\text{CF}_2-\text{OCF}_2-\text{CF}_2-\text{Y}_{\text{AI}}$ with $\text{Y}_{\text{AI}} = \text{F}$ or OCF_3 and $\text{X}_{\text{AI}} = \text{F}$ or H . However, the individual property of monomer(s) will not be fully shown in its polymers mainly due to tremendous difference in molecular weight. Additionally, attention is directed to the fact that monomer may be also used as regular organic compound rather than be used as monomer for polymerization or copolymerization. Both inventions are thereby related to patentably

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different subject matters. Therefore, the scope of the claims, i.e., the metes and boundaries are distinct.

The requirement is still deemed proper and is therefore made FINAL. **Claims 18-33 are now pending** with three (not two as shown in Bib) independent claims (Claim 18, Claim 31 and Claim 33); **Claims 1-17 were previously cancelled**, while nonelected **Claims 31-32** are withdrawn from consideration. An action follows.

Claim Objections

3. Claims 18, 27-28 and 33 are objected to because of the following informalities (the Examiner suggests correcting the same problems throughout specification):

(a) On **Claim 18** at line 7 and on **Claim 33** at line 7, “perfluoroalkylethylene” is better changed to “**(perfluoroalkyl)ethylene**” to be consistent with the formula of $\text{CH}_2=\text{CH}-\text{R}_f$. Otherwise it may mean the perfluorinated monomer of $\text{CF}_2=\text{CF}-\text{R}_f$, which is quite different from $\text{CH}_2=\text{CH}-\text{R}_f$.

(b) On **Claim 27** at line 3 and on **Claim 28** at line 2, chemical structure recitation of “ $\text{CFX}_{\text{AI}}=\text{CX}_{\text{AI}}-\text{O}-\text{CF}_2-\text{OCF}_3-\text{CF}_2-\text{Y}_{\text{AI}}$ (A-II)” should be changed to “ $\text{CFX}_{\text{AI}}=\text{CX}_{\text{AI}}-\text{O}-\text{CF}_2-\text{OCF}_2-\text{CF}_2-\text{Y}_{\text{AI}}$ (A-II)”.

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(c) On **Claim 28** at line 3, chemical structure recitation of " $\text{CF}_2=\text{CF}-\text{O}-\underline{\text{C-F}_2}-\text{OCF}_3-\text{CF}_2-\text{O}-\text{CF}_3$ (A-IV)" should be changed to " $\text{CF}_2=\text{CF}-\text{O}-\underline{\text{CF}_2}-\text{OCF}_2-\text{CF}_2-\text{O}-\text{CF}_3$ (A-IV)".

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18-30 and 33 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 19 of **US Patent No. 6,790,932 B2 to Kapeliouchko et al.** (with the same priority date 7-21-2001 for the same assignee's Application No. 10/202,852).

This is an **obviousness-type double patenting rejection**. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant application is fully disclosed and covered by the patent already granted since the referenced patent and the instant application are claiming common subject matter, as follows:

5. **Parent Claim 18 and its dependent Claims 19-30** of present invention relate to "**thermoprocessable**" tetrafluoroethylene (TFE) copolymers containing only an amount of

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extractable cations lower than 1 ppm. The key point is that as-polymerized copolymers may be purified through washing the polymer in the gel form with an acid electrolyte as specified. The TFE-containing copolymers are obtained by polymerization of TFE with one or more monomers selected from the following: (a) C₃₋₈ perfluoroolefins; (b) C₂₋₈ hydrogenated fluoroolefins; (c) C₂₋₈ chloro- and/or iodo-fluoroolefins; (d) (per)fluoroalkylvinylethers (PAVE) CF₂=CF-O-R_f; (e) (per)fluoro-oxyalkylvinylethers CF₂=CF-O-X; (f) fluorodioxoles; (f) non-conjugated dienes of CF₂=CF-O-CF₂CF₂-CF=CF₂ or CFX¹=CX²-O-CX³CX⁴-O-CX²=CX¹F; and (g) fluorovinylethers (MOVE) having a formula of CFX_{Al}=CX_{Al}-O-CF₂-O-R_{Al}. Other parent **Claim 33** relates to the same TFE-containing copolymer of Claim 18. It contains only an amount of extractable cations lower than 1 ppm, but without citing the process of gel-type purification.

In a close examination, **Claim 19** in the same assignee's Application No. 10/202,852, now US Patent No. 6,790,932 B2 to Kapeliouchko et al. relate to "thermoprocessable" PTFE homopolymer and/or nonmodified PTFE (copolymer) in the form of fine powders (see title and abstract). The as-polymerized polymers are purified from a four-step process (see its Claim 1) comprising: (A) Obtaining of the polymer latex under the gel form; (B) **Washing with acid aqueous solutions or neutral aqueous solutions**, having a PH of 0.5-7; (C) Granulation of the washed gel by mechanical stirring, at a specific power of 1.5-10 KW/m³, until floatation of the PTFE fine powder, and separation of the floated fine powder; and (D) Drying in an aerated oven of 90-160 °C.

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6. According to Kapeliouchko's disclosure at column 3 at lines 15-21, the fine powders of PTFE homo- or co-polymers are substantially free from inorganic cations. For instance, the residual amount is < 1 ppm, which is exactly reading on the claimed amount.

Although Kapeliouchko's main effort is to obtain nonthermoprocessable TFE-containing polymers with such an excellent purity in metal cation (see title and abstract), the process to prepare thermoprocessable TFE-containing polymers has been also presented explicitly and/or implicitly throughout specification (column 1, line 5-66; column 4, line 63-67; also see references cited therein). It is noted that Kapeliouchko (see column 1, line 54-60) and current application (see page 11, bottom section) may use **the same type of emulsion (or dispersion) polymerization process to prepare polymers as well as the same or similar gel-type purification to purify as-prepared polymers.** Therefore, one having ordinary skill in the art would find it obvious to conveniently **apply the same purification process as taught by** Kapeliouchko to obtain thermoprocessable TFE-containing polymers with the same degree of purity on the amount of inorganic (metal) cations. By doing so, more diversified products can be obtained.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

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patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. The limitation of parent **Claim 18** in present invention relates to thermoprocessable tetrafluoroethylene (TFE) copolymers obtained by polymerization of TFE with one or more monomers selected from the following:

(a) C_{3-8} perfluoroolefins;

(b) C_{2-8} hydrogenated fluoroolefins;

(c) C_{2-8} chloro- and/or iodo-fluoroolefins;

(d) (per)fluoroalkylvinylethers (PAVE) $CF_2=CF-O-R_f$;

(e) (per)fluoro-oxyalkylvinylethers $CF_2=CF-O-X$;

(f) fluorodioxoles; (f) non-conjugated dienes of $CF_2=CF-O-CF_2CF_2-CF=CF_2$ or $CFX^1=CX^2-O-CX^3CX^4-O-CX^2=CX^1F$; and

(g) fluorovinylethers (MOVE) having a formula of $CFX_{Al}=CX_{Al}-O-CF_2-O-R_{Al}$;

wherein all factors in the above monomers are as specified; and wherein the copolymers are purified through washing the polymer gel as specified so as to contain an amount of extractable cations lower than 1 ppm. See other limitations of dependent **Claims 19-30**.

Other parent **Claim 33** relates to the same TFE-containing copolymer of Claim 18. It contains only an amount of extractable cations lower than 1 ppm, but without citing the process of gel-type purification.

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9. Claims 18-30 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Bloong et al. (US 6,693,164 B2 with US filing date of May 23, 2001 and US effective filing date of June 1, 2000).

Regarding the limitation of two parent **Claims 18 and 33**, **Bloong et al.** have disclosed various high purity TFE-containing thermoplastic fluoropolymers and its process of making and purifying so as to reduce the level of the extractable ions in the fluoropolymer to less than 0.05 ppm (abstract, line 1-6; column 1, line 46-52; see various types of TFE-containing fluoropolymers at column 2, line 44-59; particularly see “thermoplastic” on column 2, line 19 and 36 and 44).

Although it may be produced from the gel-type purifying process as specified (which is quite different from Bloong’s agglomerating and then fluorinating process for purification), parent Claim 18 is treated as a composition claim only in the current situation; while parent Claim 33 is a pure composition claim. According to MPEP, the scope of both claims only requires containing an amount of extractable cations lower than 1 ppm. Therefore, Bloong anticipates both Claim 18 and Claim 33.

10. Remaining dependent **Claims 19-30** are only dealing with using different types of co-monomer(s) to be copolymerized with TFE monomer. The limitations can be explicitly and/or implicitly anticipated by Bloong’s disclosure (particularly on column 2, line 44-59) as well as the references’ disclosure cited therein.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to thermoprocessable tetrafluoroethylene (TFE) copolymers obtained by polymerization of TFE with one or more monomers as specified in Claim 1 and purified through washing polymer gel so as to contain only an amount of extractable cations lower than 1 ppm: **US Patent No. 4,675,380 to Buckmaster et al.** disclose a process for the preparation of **"melt-processable" tetrafluoroethylene/perfluoroolefin copolymer granules** (see title), the process comprises adding a gelling agent to the polymer dispersion and a mineral acid such as nitric acid while being agitated, and then **a water-immiscible liquid is added to break the gelled structure** (column 4, line 1-28). After coagulation, the product is separated, washed and dried as routine (see examples). However, Buckmaster fails to teach or fairly suggest first obtained the dispersion in the form of gel, then washed and agitated only with aqueous solution. The amount of extractable cations lower than 1 ppm is NOT disclosed or suggested.

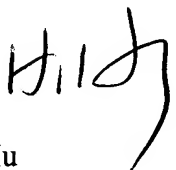
US Patent No. 4,990,283 to Visca discloses a process to **prepare micro-emulsions of perfluoropolyether in water medium by a fluorinated surfactant** (abstract, line 1-8).

Although **a gel was obtained** with addition of PFPE (column 6, line 59), no claimed process of present invention was disclosed. The amount of extractable cations lower than 1 ppm is NOT

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disclosed or suggested. Therefore, Visca fails to teach or fairly suggest the limitation of present invention.

12. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

May 11, 2006


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